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**Remarks:**

The Applicant would like to thank the Examiner for careful review of remarks filed in response to a previous Office Action. The present remarks are intended to be responsive to the new ground of rejection set forth in the Office Action of March 22, 2007. Please reconsider the application in view of the above amendments and the following remarks.

**1. Attorney Docket Number**

Please note that the Applicant has requested change of the docket number of this application.

**2. Claim Rejections – 35 U.S.C. § 112, second paragraph**

Claims 31-35 are rejected under section 112, second paragraph as failing to comply with the written description requirement. The Office Action states that the specification teaches away from an embodiment in which the seismic data is obtained during drilling. However, the specification only state a preference for measurements during a pause in the drilling operation. However, the specification does not require that the drilling be stopped. Application of the claimed method during drilling does not require significant modification beyond that known to a person skilled in the art. As such, Applicants' respectfully request consideration of claims 31-35.

**2. Claim Rejections – 35 U.S.C. § 103(a)**

Claims 18-28 and 31-35 stand rejected as being unpatentable over Kan (U.S. Patent No. 5,343,440) in view of Eaton (6,382,332). The Applicant respectfully traverses for the following reasons.

With regard to claim 18, the Office Action states that Kan discloses a method of estimating velocity ahead of a drill bit, citing col. 8:40 – col. 9:10. However, Kan's method is distinct from Applicant's claimed invention. Kan does not disclose *determining a velocity ahead of the drill bit*. Instead, Kan's method obtains velocities from VSP at the borehole (i.e. "already drilled portions of the well") and not ahead of the drill bit. Then, Kan's method determines a time-to-depth calibration of seismic data and

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"thereby shifts computed interval transit times below already drilled depth." (Kan, col. 8:34-40) As such, Kan only determines velocities for drilled sections of the borehole and not ahead of the bit. To the extent Kan provides measurement estimates ahead of the bit at all, to which Applicants disagree these are velocities, such measurement estimates are merely the result of depth shifting data obtained above the bit to below the bit. Such depth shifting is not the claimed *inversion*. Therefore, because Kan only determines velocity for already drilled regions and not for regions ahead of the bit and because Kan's depth shifting process is not equivalent to Applicant's seismic inversion process, it respectfully submitted that Kan does not teach or suggest the claimed invention.

With respect to Kan at column 8:45-58, Kan discloses a common method for imaging reflectors ahead of drilling. However, such methods for imaging forward reflectors is known to be a different method compared to estimating velocities. For this reason, Kan does not disclose the claimed *determining a velocity ahead of the drill bit*.

Finally, Kan does not disclose the claimed *inverting the surface seismic data*. Instead, the only instances that Kan discusses inversion is in terms of inverting the VSP data. This is a wholly different operation. Kan inverts the travel time data received at the downhole tool and not previously obtained surface seismic data. Likewise, Eaton does not utilize surface seismic data, instead employing while drilling time-depth VSP imaging. For these reasons, neither Kan nor Eaton disclose the claimed inverting the surface seismic data.

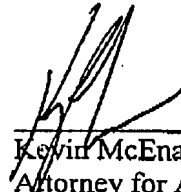
With respect to claim 31, the same arguments made above support Applicants' position that neither Kan nor Eaton, alone or in combination, teach or suggest the claimed invention.

The dependent claims not specifically addressed are presented as allowable for the reason that these dependent claims depend from allowable subject matter.

This paper is submitted in response to the Office Action dated March 22, 2007 for which the three-month date for response is June 22, 2007. Please apply any charges not covered, or any credits, to Deposit Account 19-0610 (Reference Number 19.0380).

Respectfully submitted,

Date: Jan 22, 07



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